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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,941	07/09/2001	Hyun-shik Cho	RPL-021	5945

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EXAMINER

PHINNEY, JASON R

ART UNIT PAPER NUMBER

2879

DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicant No. 09/899,941	Applicant(s) CHO, HYUN-SHIK	
	Examiner Jason Phinney	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 11, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 9, 12, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner's Notes

1. Claim 4 is objected to because of the following informalities: Line 2 recites "the a skirt attached to a frame" the Examiner believes that this should be replaced by "a skirt attached to a frame." Appropriate correction is required.

Drawings

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the limitation "the distance between the two half etching lines corresponding from the thickness of the shadow mask to twice the thickness thereof." This statement is confusing and the Examiner believes that metes and bounds of Claim 11 would be

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made obvious if rewritten as follows "the distance between the two half etching lines corresponds to twice the thickness of the shadow mask."

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 4,859,901 to Thompson-Russell.

Regarding Claim 1, Thompson-Russell discloses a color cathode-ray tube (Figure 1, #1) comprising a panel (Figure 1, #2) having a fluorescent plane (Figure 1, #5) formed on the inner surface thereof, and a shadow mask arranged at the inner side of the panel, having a predetermined distance therefrom (Figure 1, #6), wherein the shadow mask has an effective area (Figure 2, bounded by dotted line #20) in which electron beam passage holes (Figure 2, #10) are formed and a non-effective area (Figure 2, outside area bounded by dotted line #20) surrounding the effective area, and at least one half etching line (Figure 2, #24) is formed at the non-effective area of the shadow mask.

Regarding Claim 2, Thompson-Russell further discloses that the half etching line should be formed on the surface of the shadow mask, opposite to the fluorescent plane (Column 5, Lines 44-45 discloses that the pits #26 of Figure 4 are on the side of the screen which indicates that the half etching lines are also on the same side see Figure 2, #24).

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Regarding Claim 3, Thompson-Russell further discloses that the half etching line should be formed to extend toward at least one of the shorter side, longer side and corner of the shadow mask (Figure 2, #24).

Regarding Claim 5 Thompson-Russell further discloses that the half etching line should be formed on both surfaces within the non-effective area of the shadow mask (Figure 10, #'s 50 and 51).

Regarding Claim 6 Thompson-Russell further discloses that the half etching lines should be alternately formed on both surfaces of the shadow mask (Figure 10, #'s 50 and 51).

Regarding Claim 7 Thompson-Russell further discloses that the half etching line should have a rectangular shape surrounding the effective area (Figure 11, #60).

7. Claims 1 and 13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 4,191,909 to Dougherty.

Regarding Claim 1, Dougherty discloses a color cathode-ray tube (Figure 1) comprising a panel (Figure 1, #10) having a fluorescent plane (Figure 1, #24) formed on the inner surface thereof, and a shadow mask arranged at the inner side of the panel, having a predetermined distance therefrom (Figure 1, #25), wherein the shadow mask has an effective area (Figure 2, see area with apertures #54) in which electron beam passage holes (Figure 2, #54) are formed and a non-effective area (Figure 2, outside area with apertures #54) surrounding the effective area, and at least one half etching line (Figure 2, #49) is formed at the non-effective area of the shadow mask.

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Regarding Claim 13, Dougherty further discloses that the etched depth of the half etching line should correspond to between 10-35% of the thickness of the shadow mask (Column 4, Lines 8-10 teaches that the etched depth should be about 2 mils while the shadow mask should be between 6 and 7 mils which gives a ratio of between 28 and 33%).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 10, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,191,909 to Dougherty.

Regarding Claim 4, Dougherty discloses the color cathode-ray tube of Claim 1 as described above. Dougherty further discloses that the non-effective area should be bent to have a skirt (Figure 2, #48) and the half etching line (Figure 2, #49) should be placed between the bent portion and the portion attached to the frame at the skirt (see Figure 2). Dougherty fails to exemplify that the skirt should be attached to a frame, however, while the invention is preferably used in a frameless mask, Dougherty teaches that it may be used on any type of mask, which would include those with frames attached to the skirt, this would reduce electron flooding of the screen in those type of masks (see Figure 2, #48 and Column 4, Lines 45-51). It would have been

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obvious to a person having ordinary skill in the art at the time the invention was made to attach the shadow mask to a frame in order to reduce electron flooding of the screen.

Regarding claim 10, Dougherty discloses the claimed invention except for the limitation that the width of the half etching line falls within the range 50-100 μm , instead teaching that it should be about 101.6 μm by way of example. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the half etching line having a width between 50 and 100 μm , since optimization of workable ranges is considered within the skill of the art.

Regarding claim 14, Dougherty discloses the claimed invention except for the limitation that the depth of the half etching line falls within the range 15-45 μm , instead teaching that it should be about 50.8 μm by way of example. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the half etching line having a depth between 15 and 45 μm , since optimization of workable ranges is considered within the skill of the art.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,191,909 to Dougherty in view of U.S. Patent No. 6,407,497 to Lee.

Dougherty discloses all of the limitations of the color cathode-ray tube as claimed in Claim 1.

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Dougherty fails to exemplify that the panel should be a flat type whose outer surface is substantially flat and whose inner surface has a predetermined curvature.

Lee, in an alternate color cathode-ray tube teaches that the panel should be a flat type whose outer surface is substantially flat and whose inner surface has a predetermined curvature (see figure 3A) in order to produce a cleaner image, avoid distortion, and reduce eye fatigue (Column 1, Lines 33-35).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the flat panel of Lee with the cathode-ray tube of Dougherty in order to produce a cleaner image, avoid distortion, and reduce eye fatigue.

Allowable Subject Matter

11. Claim 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to show or suggest that there should be at least two half etch lines, wherein the distance between the two half etching lines corresponds to twice the thickness of the shadow mask. A shadow mask having the above claimed features would prevent the transmission of shocks, due to vibration of the cathode-ray tube, to the shadow mask.

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13. Claims 9, 12, 15, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to show or suggest the color cathode-ray tube having a shadow mask with a half etching line wherein the distance between the effective area and the half etching lines corresponds to 100-200 μm as claimed in Claim 9. Regarding Claim 12, the prior art of record fails to show or suggest that the distance between the half etching lines should be between 100 and 150 μm . Regarding Claim 15, the prior art of record fails to show or suggest that the radius of curvature of the corner of the half etching line should be between 0.8 and 3 mm. Regarding Claim 16, the prior art of record fails to show or suggest that the length of the half etching line surrounding the corner of the shadow mask is above 60% of half the longer side or half the shorter side of the effective area of the shadow mask. A shadow mask having the above claimed features would prevent the transmission of shocks, due to vibration of the cathode-ray tube, to the shadow mask.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Phinney whose telephone number is (703) 305-3999. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JP

March 17, 2003



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